

**AMENDMENTS TO THE CLAIMS**

1-37. (canceled)

38. (withdrawn): A process for the production of a  $\beta$ -lactam, comprising the steps of:

a) fermenting on a volume scale of at least  $10\text{ m}^3$ , a microbial strain that produces a  $\beta$ -lactam in a fermentation medium which contains only chemically defined components as carbon and nitrogen sources and contains no complex raw materials, and

b) recovering the  $\beta$ -lactam from the fermentation medium,

wherein the microbial strain is a mutated or recombinant  $\beta$ -lactam producing strain that is capable of being fermented on said volume scale and that has been selected for improved performance on the medium and/or increased  $\beta$ -lactam production in comparison to a parent strain.

39. (withdrawn): A process for the production of a  $\beta$ -lactam, comprising the steps of:

a) fermenting on a volume scale of at least  $10\text{ m}^3$ , a microbial strain that produces a  $\beta$ -lactam in a fermentation medium which contains chemically defined components and a complex carbon and/or nitrogen source which is less than 10% of the total carbon and/or nitrogen sources in the medium, and

b) recovering the  $\beta$ -lactam from the fermentation medium,

wherein the microbial strain is a mutated or recombinant  $\beta$ -lactam producing strain that is capable of being fermented on said volume scale and that has been selected for improved performance on the medium and/or increased  $\beta$ -lactam production in comparison to a parent strain.

40. (withdrawn): The process of claim 38, wherein the chemically defined components comprise a carbon source selected from the group consisting of glucose, lactose, fructose, sucrose, a maltodextrin, starch inulin, glycerol, a vegetable oil, a hydrocarbon, an alcohol, an organic acid, and/or a nitrogen source selected from the group consisting of urea, ammonia, nitrate, an ammonium salt and an amino acid.

41. (withdrawn): The process of claim 40, wherein the carbon source is glucose and the nitrogen source is ammonia and/or an ammonium salt.

42. (withdrawn): The process of claim 38, wherein said fermenting is via a batch, a repeated batch, a fed-batch, a repeated fed-batch or a continuous fermentation process.

43. (withdrawn): The process of claim 42, wherein fermenting is via a fed-batch process.

44. (withdrawn): The process of claim 43, wherein a carbon and/or a nitrogen source is fed to the process.

45. (withdrawn): The process of claim 44, wherein the carbon source is glucose and the nitrogen source is ammonia and/or an ammonium salt.

46. (withdrawn): The process of claim 38, wherein the microbial strain is a filamentous microbial strain.

47. (withdrawn): The process of claim 46, wherein the filamentous strain is a fungus.

48. (withdrawn): The process of claim 47, wherein the fungus is a *Penicillium* strain.

49. (withdrawn): The process of claim 48, wherein the fungus is *Penicillium chrysogenum*.

50. (withdrawn): The process of claim 48 wherein the  $\beta$ -lactam is penicillin V.

51. (withdrawn): The method of claim 48 wherein the  $\beta$ -lactam is adipoyl-7-ADCA.

52. (currently amended): A process for the production of a  $\beta$ -lactam, comprising the steps of:

- a) fermenting on a volume scale of at least  $10\text{ m}^3$ , a microbial strain that produces a  $\beta$ -lactam in a fermentation medium, wherein the carbon source in said fermentation medium is comprising a carbon source and a nitrogen source, wherein said carbon source consists essentially of a carbohydrate, glycerol, a vegetable oil or a hydrocarbon; the nitrogen source consists essentially of in said fermentation medium is urea, ammonia, nitrate, an ammonium salt or an amino acid as a nitrogen source; and wherein said fermentation medium contains an amount of complex carbon and/or nitrogen source that is at most about 10 % of the total amount of carbon and/or nitrogen, and
- b) recovering the  $\beta$ -lactam from the fermentation medium.

53. (previously presented): The process of claim 52, wherein the carbon source is glucose and the nitrogen source is ammonia and/or an ammonium salt.

54. (previously presented): The process of claim 52, wherein said fermenting is via a batch, a repeated batch, a fed-batch, a repeated fed-batch or a continuous fermentation process.

55. (previously presented): The process of claim 54, wherein fermenting is via a fed-batch process.

56. (previously presented): The process of claim 52, wherein said carbon and/or a nitrogen source is fed to the process.

57. (previously presented): The process of claim 56, wherein the carbon source is glucose and the nitrogen source is ammonia and/or an ammonium salt.

58. (previously presented): The process of claim 52, wherein the microbial strain is a filamentous microbial strain.

59. (previously presented): The process of claim 58, wherein the filamentous strain is a fungus.
60. (previously presented): The process of claim 59, wherein the fungus is a *Penicillium* strain.
61. (previously presented): The process of claim 60, wherein the fungus is *Penicillium chrysogenum*.
62. (previously presented): The process of claim 59 wherein the  $\beta$ -lactam is penicillin V.
63. (previously presented): The method of claim 59 wherein the  $\beta$ -lactam is adipoyl-7-ADCA.
64. (withdrawn): A process for the production of a  $\beta$ -lactam, comprising the steps of:
- a) fermenting on a volume scale of at least 10 m<sup>3</sup>, a microbial strain that produces a  $\beta$ -lactam in a fermentation medium which contains chemically defined components and a complex carbon and/or nitrogen source which is less than 10% of the total carbon and/or nitrogen sources in the medium, and
  - b) recovering the  $\beta$ -lactam from the fermentation medium.
65. (previously presented): The process of claim 52, wherein said carbohydrate is glucose, lactose, fructose, sucrose maltodextrin or starch inulin.
66. (previously presented): The process of claim 52, wherein the amount of complex carbon and/or nitrogen source in said fermentation medium is at most about 5 % of the total amount of carbon and/or nitrogen.

67. (previously presented): The process of claim 52, wherein the amount of complex carbon and/or nitrogen source in said fermentation medium is at most about 1 % of the total amount of carbon and/or nitrogen.

68. (previously presented): The process of claim 52, wherein the fermentation medium contains no complex carbon and/or nitrogen source.